

Ecological Site Description—Rangeland

Saline Upland, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East
 MLRA: 60B – Pierre Shale Plains, East
 R058AE011MT, R060BE572MT

Site Name: Saline Upland (SU), 10–14 inches Mean Annual Precipitation (MAP)

Site Number: R058AE011MT, R060BE572MT

Major Land Resource Areas: 58A – Northern Rolling High Plains, North Part
 60B – Pierre Shale Plains, North Part

Rangeland Resource Units: 58AE – Sedimentary Plains, East
 60BE – Pierre Shale Plains, East

1. Physiographic Features: This ecological site occurs on nearly level to moderately steep sedimentary plains, hills, fans, and terraces where salt and/or alkali accumulations are apparent and salt-tolerant species dominate the plant community. This site occurs on all exposures. Slopes are mainly less than 20%, but can range up to 40%. Slope and aspect are generally not significant.

Elevation (feet): 1,900–3,500

Landform: sedimentary plain, hill, terrace, fan

Slope (percent): mainly 20 or less, can be up to 35–40

Depth to Water Table (inches): greater than 60

Flooding: none

Ponding: none

Runoff Class: medium to high

Aspect: not significant

2. Climatic Features: MLRAs 58A and 60B are considered to have a continental climate characterized by cold winters, hot summers, low humidity, light rainfall, and much sunshine. Extremes in temperature are typical. The climate is the result of this MLRA's location in the geographic center of North America. There are few natural barriers on the northern Great Plains and the winds move freely across the plains and account for rapid changes in temperature. Seasonal precipitation is often limiting for plant growth. Annual fluctuations in species composition and total production are typical depending on the amount and timing of rainfall. See Climatic Data Sheet MLRA 58A, east and 60B, for more details (Section II of the NRCS Field Office Technical Guide). For local climate station information, refer to <http://www.wcc.nrcs.usda.gov>.

Frost-free period (32° F)-days: 105 – 145

Freeze-free period (28° F)-days: 125 – 170

Mean annual precipitation (MAP): 10 – 14 inches

3. Influencing Water Features: None

4. Associated sites: Mainly Clayey, Silty, Silty-Saline, Claypan, and Dense Clay. (Rarely Sandy in Dawson and Richland Counties).

5. Similar sites: Saline Lowland, Dense Clay.

The Saline Lowland site is also dominated by salt tolerant plants, but will have much greater production due to the extra water either from overflow or subirrigation.

The Dense Clay site will have a hard restrictive layer in the soil at or near the surface. Salt tolerant plants may be present, but are rarely dominant.

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6. Soils: The soils associated with this ecological site are moderately to strongly saline. Surface textures are variable. Bare ground areas due to the salinity is significant. The soil surface is typically crusted, and hard or very hard when dry. Salt crystals are often observable with a low power (i.e., 10 X) lens.

Parent material (kind): alluvium

Parent material (origin): shale and other sedimentary rock

Surface textures: mainly loam, silt loam, silty clay loam

Depth (inches): greater than 20

Soil surface permeability (inches per hour): moderately slow (0.2–0.6) to slow (.06–0.2)

Available Water Holding Capacity to 40" (inches): 3–6

Drainage Class: well

Salinity/Electrical Conductivity (mmhos/cm): moderately to strongly saline (8–30)

Sodium Absorption Ratio (SAR): 10–40

Reaction (pH) (1:1 water): moderately alkaline to very strongly alkaline (7.9–9.6)

6a. Representative Soils: Listed below are soils and map units which characterize this site in various counties. (Reference MT-165, Soil Interpretive Rating Report).

COUNTIES	TYPICAL SOILS	MAP UNIT
Carter (60B)	Arsite clay	79C
Carter (60B)	Moyerson silty clay loam	77D, 477E
Custer	Antwerp silty clay loam	910B
Custer	Benz loam	21C
Dawson	Benz loam	Bn
Fallon	Benz clay loam	11C
Garfield	Antwerp silty clay loam	12C
Garfield	Sumatra silty clay loam	414C
McCone	Benz clay loam	12
Musselshell	Nobe silty clay loam	22B
Richland	Benz clay loam	BmB
Rosebud	Sumatra silty clay loam	173
Rosebud	Antwerp silty clay loam	6
Treasure	Hoven clay	Hy

7. Plant Community and Species Composition: The physical aspect of this site is that of a sparse grassland/ shrubland dominated by salt tolerant plants. Approximately 45–50% of the annual production is from grasses and sedges, 1–5% from forbs, and 35–45% is from shrubs and half-shrubs. The canopy cover of shrubs is 20–25%.

TABLE 7a.—Major Plant Species Composition, lists plant species composition and production by dry weight for the Historic Climax (HCPC) or Potential Plant Community (PPC) for this site. The Historic Climax or Potential Plant community has been determined by the study of rangeland relict areas, enclosures, or areas protected from excessive grazing. Total annual production has been derived from several data sources, and has been adjusted to represent a typical annual moisture cycle for the site. Reference for plant species names and symbols: USDA–NRCS PLANTS Database at <http://plants.usda.gov>.

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7a. Major Plant Species Composition – Historic Climax/Potential Plant Community

Common Name	Plant Symbol	Plant Group	Percent Comp.	Group Max. %	Mean Annual Precipitation (MAP) (inches)				
					10	11	12	13	14
					(lbs./acre)	(lbs./acre)	(lbs./acre)	(lbs./acre)	(lbs./acre)
Grasses and Sedges 40–50%					100	200	325	363	400
Alkali sacaton	SPAI	1	25-40		50-80	100-160	162-260	181-290	200-320
Western wheatgrass	PASM	14	15-20		30-40	60-80	98-130	109-145	120-160
Inland saltgrass	DISP	15	5-10		10-20	20-40	32-65	36-72	40-80
Montana wheatgrass	ELLAA	14	0-5		0-10	0-20	0-32	0-36	0-40
Alkali bluegrass	POJU	12	1-5)	15	2–30 No more than 10 for any one	4–60 No more than 10 for any one	6–98 No more than 10 for any one	7–109 No more than 10 for any one	8–120 No more than 10 for any one
Nuttall's alkaligrass	PUNU	2	1-5)						
Blue grama	BOGR2	15	1-5)						
Sandberg bluegrass	POSE	12	1-5)						
Bottlebrush squirreltail	ELEL5	10	1-5)						
Other native grasses	2GP		1-5)						
Forbs 1–5%					10	20	32	36	40
Poverty sumpweed	IVAX	23	1-5)	5	2-10	4-20	6-32	7-36	8-40
American vetch	VIAM	18	1-5)						
Buckwheat spp.	ERIOG	23	1-5)						
Biscuitroot spp.	LOMAT	24	1-5)						
Aster spp.	ASTER	19	1-5)						
Other native forbs	2FP		1-5)						
Curlycup gumweed	GRSQ		0-T	T	T	T	T	T	T
Two-grooved poisonvetch	ASBI2	24	0-T		T	T	T	T	T
Shrubs 35–45%					90	180	293	326	360
Nuttall's saltbush	ATNU2	34	15-30	45	30-60	60-120	98-195	109-218	120-240
Winterfat	KRLA2	35	5-20		10-40	20-80	32-130	36-145	40-160
Greasewood	SAVE4	37	5-10		10-20	20-40	32-65	36-72	40-80
Rubber rabbitbrush	ERNAN5	36	0-5		0-10	0-20	0-32	0-36	0-40
Other native shrubs	2SB		0-5		0-10	0-20	0-32	0-36	0-40
Plains pricklypear	OPPO	38	0-T	T	T	T	T	T	T
Broom snakeweed	GUSA2	37	0-T		T	T	T	T	T
Total Annual Production (lbs./acre)			100%		200	400	650	725	800

7b. Plant Group Descriptions: Plant functional groups are based on: season of growth, growth form, stature, type of root system, and ecological response to disturbance. Refer to Field Office Technical Guide (FOTG) Section II for a complete description of plant groups.

8. Total Annual Production: Total annual production is a measurement of the total aboveground production (dry weight) of all major plant species that occur on the site during a single growth year, regardless of preference to grazing animals. This information is listed at the bottom of TABLE 7a.—Major Plant Species Composition. Average production values are listed for each incremental inch of precipitation for the site.

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9. Cover and structure: The following table shows the approximate amounts of basal cover, canopy cover, and plant heights for this site in the Historic Climax or Potential Plant Community.

COVER TYPE	BASAL COVER (%)	CANOPY COVER (%)	AVERAGE HEIGHT (inches)
Cryptogams	0 – T	0 – T	0.25
Grasses/ sedges	5 – 10	10 – 15	24
Forbs	T – 1	1 – 5	18
Shrubs	5 – 10	20 – 25	24
Litter	10 – 15		
Coarse fragments	0 – 1		
Bare ground	60 – 80		

10. Ecological Dynamics: This site developed under Northern Great Plains climatic conditions, which included the natural influence of large herbivores and occasional fire. The plant community upon which interpretations are primarily based is the Historic Climax Plant Community (HCPC) or Potential Plant Community. This community is described as a reference to understand the original potential of this site, and is not always considered to be the management goal for every acre of rangeland. The following descriptions should enable the landowner or manager to better understand which plant communities occupy their land, and assist with setting goals for vegetation management. It can also be useful to understand the environmental and economic values of each plant community.

This site is considered moderately resilient to disturbance as it has moderate to high soil limitations for plant growth. Changes may occur to the Historic Climax Plant Community due to management actions and/or climatic conditions. Under continued adverse impacts, a moderate decline in vegetative vigor and composition will occur. Under favorable vegetative management treatments the site can more readily return to a community that resembles the Historic Climax Plant Community.

Continual adverse impacts to the site over a period of years results in a departure from the HCPC, with a decrease of the taller, more palatable species such as **alkali sacaton, western wheatgrass, winterfat, and Nuttall's saltbush**. These plants will be replaced by **inland saltgrass, Sandberg bluegrass, bottlebrush squirreltail**, other less palatable grasses and forbs, and **greasewood**.

Continued deterioration results in a dominance of short grasses, especially **inland saltgrass, annual grasses and forbs, and greasewood**. Occasionally, this site can be dominated by a stand of **Nuttall's saltbush** that has a prostrate growth form from heavy use.

Plants that are not a part of the climax community that are most likely to invade are **Japanese brome, cheatgrass, and annual and biennial forbs**.

10a. Major Plant Community Types: Following are descriptions of several plant communities that may occupy this site.

Plant Community 1: Tall and Medium Grasses/ Medium Shrubs: This is the interpretive plant community and is considered to be the Historic Climax Plant Community (HCPC) or Potential Plant Community (PPC) for this site. This plant community is a mixture of cool and warm season grasses, including **alkali sacaton, western and Montana wheatgrass**, plus several short grasses such as **alkali bluegrass and Nuttall's alkaligrass**. Diversity of forbs is low on this site. Shrubs including **Nuttall's saltbush, winterfat, and greasewood** comprise nearly half of the plant community. **Wyoming big sagebrush** may also occur.

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This plant community is well adapted to the Northern Great Plains climatic conditions. The diversity in plant species and the presence of tall, deep rooted perennial grasses allows for high drought tolerance, considering the limitations of the site. Individual species can vary greatly in production depending on growing conditions (timing and amount of precipitation and temperature). Plants on this site have strong, healthy root systems that allow production to increase significantly with favorable precipitation. Abundant plant litter is available for soil building and moisture retention. Plant litter is properly distributed with very little movement off-site and natural plant mortality is very low. This plant community provides for high soil stability and a functioning hydrologic cycle.

Plant Community 2: Medium and Short Grasses/ Medium Shrubs: Slight variations in the Historic Climax or Potential Plant Community often result in a community where **western wheatgrass, Sandberg bluegrass, and inland saltgrass** become more dominant. **Greasewood** often becomes prevalent on the site.

Grass biomass production and litter become reduced on the site as the taller grasses disappear, increasing evaporation and reducing moisture retention. Additional open space in the community can result in undesirable invader species. This plant community provides for moderate soil stability.

Plant Community 3: Short Grasses/ Medium Shrubs/ Cacti: With continual heavy disturbance over several years, this site will experience a loss of topsoil and an increase of bare ground. Continued degradation in the plant community usually results in a community dominated by **inland saltgrass, greasewood, and plains pricklypear**. Other plants, such as Nuttall's alkaligrass, Sandberg bluegrass, and Nuttall's saltbush may still be present. Grasses such as **bottlebrush squirreltail** become common. **Greasewood** is often high in MLRA 60B.

Plant Community 4: Low Shrubs/ Short Grasses/ Cacti: Some sites may retain a large amount of **Nuttall's saltbush**, even in what appears to be a deteriorated condition. The plants have a prostrate growth form, protecting them from further heavy grazing. This appears to be a stable and common community. Often, **bottlebrush squirreltail, Sandberg bluegrass, one of the wheatgrasses**, and a few forbs are the main associated species.

This site is not highly productive. Large areas of bare ground between the plants are common.

Plant Communities 3 and 4 have lost many of the attributes of a healthy rangeland, including good infiltration, minimal erosion and runoff, nutrient cycling and energy use.

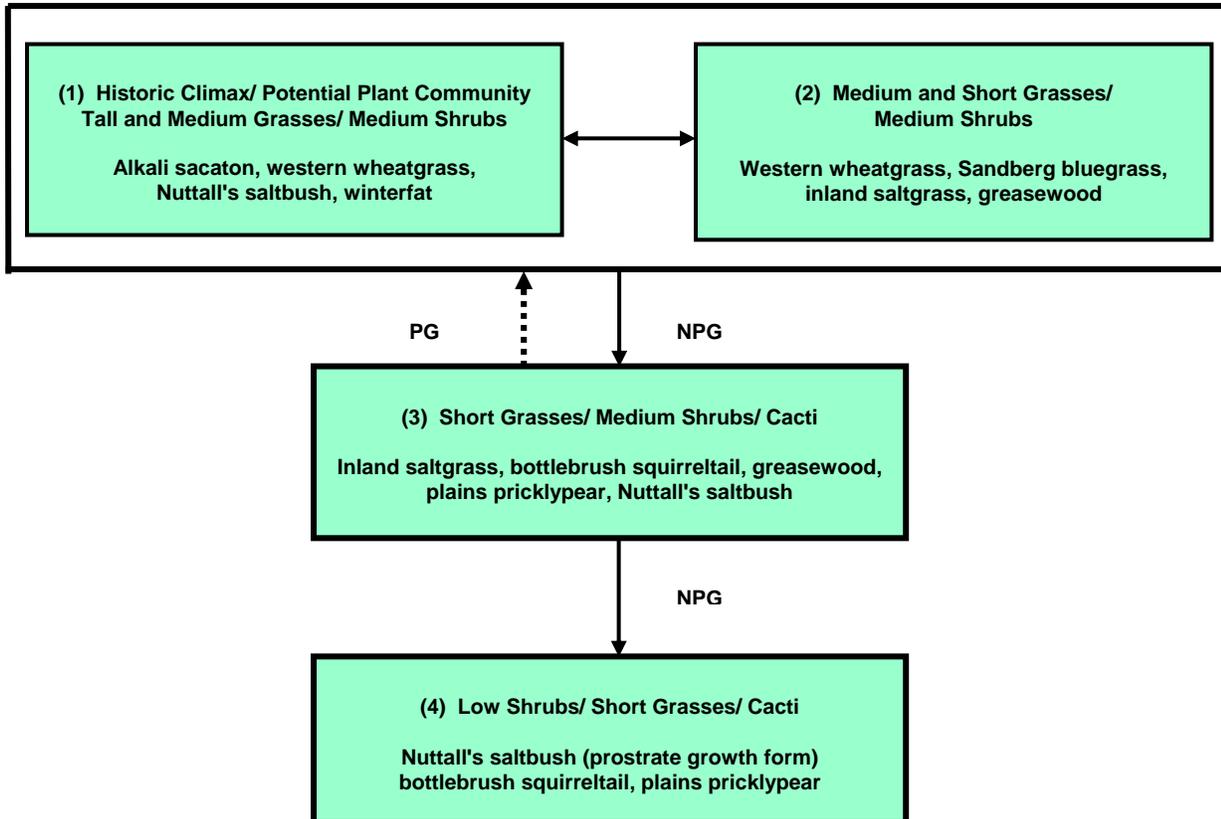
10b. Plant Communities and Transitional Pathways (State and Transition Model): Transitions in plant community composition occur along a gradient that is not linear. Many processes are involved in the changes from one community to another. Changes in climate, elevation, soils, landform, fire patterns and frequency, and grazing all play a role in determining which of the plant communities will be expressed. The following model outlines some of the various plant communities that may occur on this site and provides a diagram of the relationship between plant community and type of use or disturbance.

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Plant Communities and Transitional Pathways (diagram)



Smaller boxes within a larger box indicate that these communities will normally shift among themselves with slight variations in precipitation and other disturbances. Moving outside the larger box indicates the community has crossed a threshold (heavier line) and will require intensive treatment to return to Community 1 or 2. Dotted lines indicate a reduced probability for success.

NOTE: Not all species present in the community are listed in this table. Species listed are representative of the plant functional groups that occur in the community.

PG = Prescribed Grazing: Use of a planned grazing strategy to balance animal forage demand with available forage resources. Timing, duration, and frequency of grazing are controlled and some type of grazing rotation is applied to allow for plant recovery following grazing.

NPG = Non-Prescribed Grazing: Grazing which has taken place that does not control the factors as listed above, or animal forage demand is higher than the available forage supply.

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11. Plant Growth Curves: Growth of native cool-season plants begins in April and continues to the end of June. Native warm-season plants begin growth about mid May and continue to about the end of August. Green up of cool-season plants can occur in September through October when adequate soil moisture is present. The following tables show the approximate percentage of total growth by month that is expected to occur in various plant communities on this site for a "typical" moisture year.

Growth Curve Number: MT0811

Growth Curve Description: Includes all eastern sedimentary plains sites in the 10–14" p.z. with droughty upland soils, having mainly cool season plants.

Totals for Each Month

Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
0	0	5	25	35	30	5	0	0	0	0	0

Cumulative Totals by Month

Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
0	0	5	30	65	95	100	0	0	0	0	0

12. Livestock Grazing Interpretations: Managed livestock grazing is suitable on this site as it has the potential to produce a moderate amount of high quality forage. Management objectives should include maintenance or improvement of the plant community. Shorter grazing periods and adequate re-growth after grazing are recommended for plant maintenance and recovery. Heavy stocking and season long use of this site can be detrimental and will alter the plant community composition and production over time.

Whenever Plant Community 2 occurs (medium grasses and shrubs), grazing management strategies need to be implemented to avoid further deterioration. This community is still stable, productive, and healthy provided it receives proper management. This community will respond fairly quickly to improved grazing management including increased growing season rest of key forage plants. Grazing management alone can usually move this community back to one more similar to potential if a good seed source of the taller grasses still exists.

Plant Community 3 and 4 have severely reduced forage production (< 400 pounds per acre). Once this site is occupied by Plant Community 3 or 4, it will be more difficult to restore it to a community that resembles the potential with grazing management alone. Additional growing season rest is often necessary for re-establishment of the desired species and to restore the stability and health of the site.

12a. Calculating Safe Stocking Rates: Proper stocking rates should be incorporated into a grazing management strategy that protects the resource, maintains or improves rangeland health, and is consistent with management objectives. Safe stocking rates will be based on useable forage production, and should consider ecological condition and trend of the site, and past grazing use history.

Calculations used to determine a safe stocking rate are based on the amount of useable forage available, taking into account the harvest efficiency of the animal and the grazing strategy to be implemented. Average annual production must be measured or estimated to properly assess useable forage production and stocking rates.

12b. Guide to Safe Stocking Rates: The following charts provide a guide for determining a safe safe stocking rate. Animal Unit Month (AUM) figures are based on averages of forage production from data collected for this site over several years. The characteristic plant communities and production values listed may not accurately reflect the productivity of a specific piece of land, hence this table should not be used without on-site information as to current forage productivity of the site. Adjustments to stocking rates for each range unit must be made based on topography, slope, distance to livestock water, and other factors which effect livestock grazing behavior.

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12c. Stocking Rate Guide:

Major Plant Community Dominant Plant Species	MAP	Total Production (pounds/ac)	Cattle			Sheep		
			Forage Production	AUM/ac	Ac/AUM	Forage Production	AUM/ac	Ac/AUM
1. Tall and Medium Grasses, Shrubs (HCPC/PPC) <i>Alkali sacaton, western wheatgrass, Nuttall's saltbush, winterfat</i> (S.I. >70%)	13-14"	725 – 800	550 – 650	.17 – .20	5.0 – 5.9	600 – 700	.19 – .22	4.5 – 5.3
	10-12"	200 – 650	400 – 550	.05 – .16	6.25 – 20	175 – 550	.06 – .17	5.9 – 16.7
2. Medium and Short Grasses, Medium Shrubs <i>Western wheatgrass, Sandberg bluegrass, inland saltgrass, greasewood</i> (S.I. 50–70%)	13-14"	600 – 700	400 – 550	.13 – .17	5.9 – 7.7	450 – 600	.14 – .19	5.3 – 7.1
	10-12"	175 – 550	100 – 450	.03 – .14	7.1 – 33.3	125 – 475	.04 – .15	6.7 – 25.0
3. Short Grasses, Medium Shrubs, Cacti <i>Inland saltgrass, bottlebrush squirreltail, greasewood, plains pricklypear, Nuttall's saltbush</i> (S.I. 30–50 %)	10-14"	150 – 600	100 – 400	.03 – .13	7.7 – 33.3	100 – 450	.03 – .14	7.1 – 33.3
4. Low Shrubs, Short Grasses, Cacti <i>Nuttall's saltbush, bottlebrush squirreltail, plains pricklypear</i> (S.I. < 30%)	10-14"	100 – 400	50 – 200	.01 – .04	25.0 – 100	50 – 250	.01 – .05	20.0 – 100

Stocking rates are calculated from average forage production values using a 25% Harvest Efficiency factor for preferred and desirable plants, and 10% Harvest Efficiency for less desirable species. AUM calculations are based on 790 pounds per animal unit month (AUM) for a 1000-pound cow with calf up to 4 months. No adjustments have been made for site grazability factors, such as steep slopes, site inaccessibility, or distance to drinking water.

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12d. Plant Forage Preferences for Cattle and Sheep

Legend: P=Preferred D=Desirable U=Undesirable E=Emergency
N=Nonconsumed T=Toxic Blank=Unknown or no data

Winter (W) = Jan., Feb., March; Spring (SP) = April, May, June;
Summer (SU) = July, Aug., Sept.; Fall (F) = Oct., Nov., Dec.

PLANT NAME	Cattle				Sheep			
	W	SP	SU	F	W	SP	SU	F
Alkali sacaton	P	D	D	D	D	D	D	D
Western wheatgrass	P	D	D	P	D	D	D	D
Inland saltgrass	N,E	N	N,E	N,E	U	U	U	U
Montana wheatgrass	P	P	P	P	P	P	P	P
Alkali bluegrass	P	P	D	P	P	P	D	P
Nuttall's alkaligrass	P	P	P	P	P	P	P	P
Blue grama	D	D	D	D	D	P	P	D
Sandberg bluegrass	D	D	D	D	D	D	D	D
Bottlebrush squirreltail	D	D	D	N	U	D	D	U
American vetch	N	P	P	D	N	P	P	D
Poverty sumpweed	N	N	N	N	N	U	N	M
Buckwheat spp.	N	U	U	N	N	D	D	N
Biscuitroot spp.	N	D	U	N	N	D	D	N
Aster spp.	N	D	D	N	N	D	D	N
Other native forbs	N,E	N,E	N,E	N,E	N,E	N,E	N,E	N,E
Curlycup gumweed	N	N	N	N	N	N	N	N
Two grooved poisonvetch	T	T	T	T	N	T	T	T
Nuttall's saltbush	P	P	P	P	P	P	P	P
Winterfat	P	P	P	P	P	D	D	P
Greasewood ^{1/}	N	N	N,E	N,E	D,T	D,T	D,T	D,T
Rubber rabbitbrush	U	U	U	U	U	U	U	U
Other shrubs	N	N	N	N	N	N	N	N
Broom snakeweed ^{2/}	N	N	N	U	U	U	U	U
Plains pricklypear ^{3/}	N	N	N	N	U	U	U	U

^{1/} Can be toxic to sheep in spring if large quantities are ingested.

^{2/} Broom snakeweed can be poisonous, but this is not usually a problem in Montana because plants die back in winter and do not have green leaves in early spring.

^{3/} The spines can be injurious to livestock.

13. WILDLIFE INTERPRETATIONS: The following is a description of habitat values for the different plant communities that may occupy the site:

Plant Community 1: Tall and Medium Grasses/ Medium Shrubs (HCPC or PPC): The high percentage of shrubs and half-shrubs in this community favors browsers and mixed feeders like pronghorn and mule deer. Thermal and escape cover is available for big game animals. The mix of warm and cool season grasses and shrubs provides nutritious forage for ungulates most of the year. The prevalence of bare ground limits ground-nesting bird habitat value although species such as Brewer's, vesper and grasshopper sparrows, lark buntings and meadow larks use this plant community. Small mammal populations are dominated by seed-eaters like the deer mouse and harvest mouse. Voles are limited by low litter and residual vegetation cover.

Plant Community 2: Medium and Short Grasses/ Medium Shrubs: The loss of warm season species such as alkali sacaton shortens the period of high nutrition for grazers and mixed feeders. Reductions in litter cover and residual vegetation further limit ground-nesting bird habitat value.

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Plant Community 3: Short Grasses/ Medium Shrubs/ Cacti: General wildlife habitat value and forage for big game species are considerably reduced with the loss of vegetative structural diversity. Thermal and hiding cover and some browse are available for big game animals. Increased bare ground and further reductions in litter and residual grass cover degrade habitat value for ground-nesting birds and small mammals. Brewer's sparrows, lark buntings and meadowlarks are examples of songbird species which may use this community.

Plant Community 4: Low Shrubs/ Short Grasses/ Cacti: Wildlife habitat is very low in general. Pronghorn and mule deer may use the prostrate Nuttall's saltbush for browse.

13a. Plant Preferences for Antelope and Deer:

Legend: P=Preferred D=Desirable U=Undesirable E=Emergency
N=Nonconsumed T=Toxic Blank=Unknown or no data

Winter (W) = Jan., Feb., March; Spring (SP) = April, May, June;
Summer (SU) = July, Aug., Sept.; Fall (F) = Oct., Nov., Dec.

PLANT NAME	Antelope				Deer			
	W	SP	SU	F	W	SP	SU	F
Perennial grasses	P	P	P	P	D	P,D	D	D
Annual grasses	N	P,D	N	D	N	P,D	N	D
American vetch	P	P	P	P	D	P	P	P
Eriogonum spp.	D	D	D	D	D	D	D	D
Curlycup gumweed	N	N	N	N	N	N	N	N
Poverty sumpweed	N	N	N	N	N	N	N	N
Biscuitroot	U	P	P	U	U	P	P	U
Other forbs	N	N	N	N	N	N	N	N
Nuttall's saltbush	P	P	P	P	D	P	P	D
Winterfat	P	P	P	P	P	P	P	P
Greasewood	P	P	D	D	P	P	D	D
Rubber rabbitbrush	D	D	D	D	D	D	D	D
Other shrubs	N	N	N	N	N	N	N	N
Broom snakeweed	N	N	D	N	D	D	P	P

14. Hydrology Data: The soils associated with this ecological site are generally in Hydrologic Soil Group D. The infiltration rates for these soils will normally be moderately slow to slow. The runoff potential for this site is moderate to high depending on slope and ground cover/health. Runoff curve numbers generally range from 78 to 90.

Good hydrologic conditions exist on rangelands if plant cover (grass, litter, and brush canopy) is greater than 70%. Fair conditions exist when cover is between 30 and 70%, and poor conditions exist when cover is less than 30%. Sites in high similarity to HCPC (Plant Communities 1 and 2) generally have enough plant cover and litter to optimize infiltration, minimize runoff and erosion, and have a good hydrologic condition. The deep root systems of the potential vegetation help maintain or increase infiltration rates and reduce runoff.

Sites in low similarity (Plant Communities 3 and 4) are generally considered to be in poor hydrologic condition as the majority of plant cover is from more shallow-rooted grasses and shrubs.

Erosion is minor for sites in high similarity. Rills and gullies should not be present. Water flow patterns, if present, will be barely observable. Plant pedestals are essentially non-existent. Plant litter remains in place and is not moved by erosion. Soil surfaces should not be compacted or crusted. Plant cover and litter helps retain soil moisture for use by the plants. Maintaining a healthy stand of perennial vegetation will optimize the amount of precipitation that is received. (Reference: Engineering Field Manual, Chapter 2 and Montana Supplement 4).

Ecological Site Description—Rangeland

Saline Upland, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East
MLRA: 60B – Pierre Shale Plains, East
R058AE011MT, R060BE572MT

15. Recreation and Natural Beauty: This site provides valuable open space and visual aesthetics. This site provides marginal recreational opportunities for hiking, big game and upland bird hunting. Caution should be used during wet weather periods. The forbs have flowers that appeal to photographers.

16. Wood Products: None

17. Site Documentation:

Authors: Original: REL, AJN, 1983 Revised: JVF, REL, RSN, MJR, SKW, SVF, POH, 2003

Supporting Data for Site Development:

NRCS–Production & Composition Record for Native Grazing Lands (Range-417): 1
BLM–Soil & Vegetation Inventory Method (SVIM) Data: 5
NRCS–Range Condition Record (ECS-2): 5
NRCS–Range/Soil Correlation Observations & Soil 232 notes: 44

Field Offices where this site occurs within the state:

Baker	Ekalaka	Hysham	Sidney
Billings	Forsyth	Jordan	Terry
Broadus	Glendive	Miles City	Wibaux
Circle	Hardin	Roundup	

Site Approval: This site has been reviewed and approved for use:

Rhonda Sue Noggles
State Rangeland Management Specialist

06/30/03
Date

Ecological Site Description—Rangeland

Saline Upland, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East
MLRA: 60B – Pierre Shale Plains, East
R058AE011MT, R060BE572MT



**Saline Upland 10-14”
Sedimentary Plains, east
Plant Community 1
HCPC /PPC**



**Saline Upland 10-14”
Sedimentary Plains, east
Plant Community 1
HCPC /PPC
Alkali sacaton**



**Saline Upland 10-14”
Sedimentary Plains, east
Plant Community 1
HCPC /PPC
Rosebud County**

Ecological Site Description—Rangeland

Saline Upland, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East
MLRA: 60B – Pierre Shale Plains, East
R058AE011MT, R060BE572MT



Saline Upland 10-14"
Sedimentary Plains, east
Plant Community 1
HCPC /PPC
Rosebud County



Saline Upland 10-14"
Sedimentary Plains, east
Plant Community 1
HCPC /PPC
Carter County



Saline Upland 10-14"
Sedimentary Plains, east
Plant Community 2

Ecological Site Description—Rangeland

Saline Upland, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East
MLRA: 60B – Pierre Shale Plains, East
R058AE011MT, R060BE572MT



**Saline Upland 10-14”
Sedimentary Plains, east
Plant Community 2
Rosebud County**



**Saline Upland 10-14”
Sedimentary Plains, east
Plant Community 2**



**Saline Upland 10-14”
Sedimentary Plains, east
Plant Community 2**

Ecological Site Description—Rangeland

Saline Upland, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East
MLRA: 60B – Pierre Shale Plains, East
R058AE011MT, R060BE572MT



**Saline Upland 10-14”
Sedimentary Plains, east
Plant Community 3
Carter County**



**Saline Upland 10-14”
Sedimentary Plains, east
Plant Community 3**



**Saline Upland 10-14”
Sedimentary Plains, east
Plant Community 4
Nuttall’s saltbush**

Ecological Site Description—Rangeland

Saline Upland, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East
MLRA: 60B – Pierre Shale Plains, East
R058AE011MT, R060BE572MT



**Saline Upland 10-14”
Sedimentary Plains, east
Plant Community 4
Rosebud County**



**Saline Upland 10-14”
Sedimentary Plains, east
Plant Community 4
Rosebud County**